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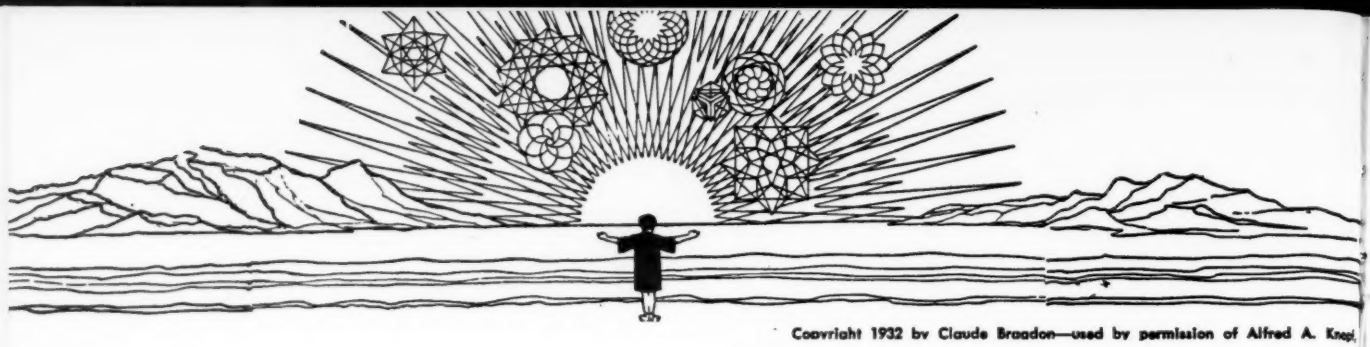

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MAIN CURRENTS
IN MODERN THOUGHT

A cooperative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.

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MAIN CURRENTS IN MODERN THOUGHT is published to call attention to significant contributions to learning currently being made in the multiple fields, relating these advances to each other and to classical and contemporary views of Eastern, European and American thinkers. It is designed to save time for the reader by providing a vantage-ground from which the whole world of knowledge may be surveyed and kept in proportion as it moves toward integration. Its editors assume that the principles of art, the universals of philosophy, the laws of Nature and Man as formulated by science, and the truths of comparative religion, can be orchestrated into a harmonic, meaningful, ethical body of teachings which can and should be made the central core of curricular study in the educative process at all levels. Contributors to MAIN CURRENTS enjoy full liberty of opinion and expression in these pages.

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THE RECONCILIATION OF TECHNOLOGICAL AND NON-TECHNOLOGICAL SOCIETY*

F. S. C. Northrop

Man's Relation to the Earth in Its Bearing on His Aesthetic, Ethical and Legal Values

CONTEMPORARY man is at once the creator and the captive of a technological civilization. Its instruments have related him to the earth in a new way. This new way has reflected back upon man himself, forming and altering his values. Of what do these modifications of the humanity of man consist? This, I take it, is our question.

Put more concretely, the question is: What effect has man's role in changing the face of the earth on his aesthetic sensitivity and creativity, his ethical and legal standards for ordering his relations to his fellow-men, his emotive relation to nature itself and to its creation, and his moral standards for determining whether his tools are used for good or bad ends? The last factor suggests that the answer which the evidence and its analysis permit us to give to this question may well determine whether man remains the master or becomes the slave and perhaps even the murdered victim of his tools.

In selecting and analyzing the relevant evidence, what method are we to use? Clearly the method chosen will determine the character of the answer. It is important, therefore, that we allow the nature of the question to guide us to the relevant data for answering it. Our question implies two things: first, that man's relation to nature is different in a technological civilization from what it is in a non-technological one; second, that his cultural values differ correspondingly. Our first task, therefore, becomes that of finding the criterion which distinguishes a technological from a non-technological civilization. Having done this, we can then turn to the respective values of each.

The difference between a technological and a non-technological civilization

FINDING this difference is not easy. The difficulty becomes evident when one asks: Do not all men have tools, at least the tools of their natural hands and of natural objects, and hence are not all civilizations technological civilizations? An affirmative answer to this question would mean that the difference confronting us is merely one of quantitative degree or complexity and not a difference in kind. Then the point at which one draws a line between a technological and a non-technological society would be purely arbitrary. But, if so, why did the passage from the one civilization to the other result in a change in men's mentality and values? Why, when the instruments and legal norms of a technological civilization enter Africa and Southeast Asia, do the natives there feel that they are confronted with something baffling which they do not understand and which to them seems destructive of all values? These reactions could hardly occur if the difference between a non-technological and a technological civilization were merely one of complexity.

How is the suggested difference in kind to be found? Our question indicates the way. When it refers to a technological civilization, it clearly means one in which mechanical, chemical, electrical, and the recently born communication engineering play a dominant role. From where does this type of toolmaking come?

Its source clearly is in physical chemistry and in physics. More specifically these engineering sciences derive from the mathematical acoustics of Democritus, the mathematical-physical chemistry of Willard Gibbs, the mathematical mechanics of Newton, Einstein, and Schroedinger, and the mathematical electromagnetics of Maxwell, Lorentz, and Planck.

These sciences are unique. Their basic elementary scientific objects and relations are not directly observable. Instead, they are axiomatically constructed entities and relations whose existence is verified only indirectly by way of experiments which confirm their deductive consequences. Professor Einstein tells us (1934) that this way of knowing nature arose with the ancient Greeks and adds that the person who has not been thrilled by Euclid does not understand contemporary mathematical physics. Chiang Monlin, former vice-chancellor of Peking National University, tells us also (1947) that the ancient Greeks discovered an unique way of knowing nature and of relating man to nature. After being trained in the way of knowing man and nature of a Confucian,

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Chinese non-technological civilization, he came, as a young man, to the University of California at Berkeley, where for the first time he was introduced to the abstract concepts of Greek philosophy and of Greek mathematical physics. He adds that he felt quite at home mentally in the Western natural history, descriptive sciences of botany and zoology but that in Greek philosophy and in deductively formulated mathematical physics he found himself confronted with something completely foreign to his classical Chinese mind. Students of the history of mathematics (Cohen and Drabkin, 1948) confirm also that, while many people previous to the ancient Greeks had discovered isolated propositions of Euclid, such as the Pythagorean theorem, it was the Greeks who first grasped the idea of proving these otherwise isolated findings by deducing them rigorously from a very small number of axiomatically constructed entities and relations and then using this way of thinking and knowing to understand man and nature empirically.

Here we come upon the difference in kind which distinguishes a technological civilization from a non-technological one. The nature to which a non-technological civilization relates man is completely exhausted by immediately apprehended, or by purely inductively sensed, entities and relations. Its scientific objects are defined in terms of directly sensed properties. As noted above by Chiang Monlin, such science exists in non-technological societies. It is the science of the purely descriptive, natural history type. Natural history biology, with its species and genera, is an example. Aristotle's physics, in which the terrestrial scientific object "water" was defined in terms of the sensed qualities "wet" and "cold," is another example. Early atomic theories of the Charavkian materialists and the Vaiseshika dualists of India are similar examples. The Chinese natural history paintings of birds and bamboo are another instance (Sowerby, 1940). Such science is strong descriptively, but weak predictively. It is also weak in the tools which it generates. This occurs because, deriving its tools from sensed objects and materials, it obtains only such tools as come from modifying and manipulating such objects and materials (Singer *et al.*, 1954, chaps. v, vi, xx-xxv).

The science of a technological civilization takes this natural history type of knowledge merely as its data. It does not suppose that adequate knowledge of man or of nature has been obtained until the gross sensed objects and their described relations can be deduced from a very small number of unobservable, more elementary, axiomatically constructed objects and relations such as electrons, electromagnetic waves, and their mathematical laws. From the axiomatically constructed postulates of the deductively formulated theory, which designates such elementary particles and their relations, theorems can be logically deduced. These theoretically deduced theorems specify the possibility of new tools—tools quite different from anything one would come upon merely by moving sensed materials about.

The atomic bomb is an example. It was not discovered by engineers moving sensed materials about, after the manner in which the tools of a non-technological civilization arise. If we had depended for it upon engineers alone working inductively and pragmatically, it would never have come into being. The idea of the possibility of releasing atomic energy came not from an engineer, or even from an experimental physicist, but from a very theoretical one—Albert Einstein—and the mass-energy equation of his special theory of relativity. This equation is not a relation which can be sensed. Instead, it is a theorem deduced from the very abstract and shockingly novel, axiomatically constructed postulates of Einstein's indirectly, and experimentally, verified special theory of relativity. The latter theory was discovered or introduced not in order to make a new tool but in order to clear up a theoretical difficulty in the foundations of modern mechanics and electromagnetics which was revealed by the Michelson-Morely experiment in 1885.

It is in this difference between tools made out of scientific objects of the purely inductively manipulated, immediately sensed type and tools derived from scientific objects and relations of the axiomatically constructed and deductively formulated type that the difference in kind between a non-technological and a technological civilization consists. Furthermore, it is in the difference in meanings and materials and their forms provided by immediately apprehended and immediately sensed man and nature as compared with the meanings, materials, and forms provided by axiomatically constructed, deductively conceived man and nature, with its more elementary and universal scientific objects and relations, that the difference in kind between the aesthetic, ethical, and legal values of a non-technological civilization and those of a technological one has its basis.

Cultural values of a non-technological civilization

WE must put ourselves within the way of knowing one's self and nature from which the cultural values of a non-technological civilization derive. To this end, let us suppose that we know nothing about mathematical physics and its contemporary, unimaginable and unsensed, axiomatically constructed, scientific objects and equations. Let us try to imagine also that we have no concepts of the regular solids of Euclid's geometry or of Newtonian linear, infinitely extended time, or even of matter itself. Let us try, in other words, to approach nature and ourselves afresh, in a radically empirical and purely inductive manner. What do we immediately apprehend?

Must we not describe nature somewhat as follows: It is a vast, spread-out, going-on-ness, vague and indeterminate at its outer fringes, ablaze with diverse colors, and issuing forth manifold sounds, fragrances and flavors. This initial evidence of sounds, vivid colors, flavors, and fragrances is of considerable relevance to our major question. Such entities are essentially aesthetic, at bottom indescribable and hence ineffable, the stuff of which art is made, especially impressionistic art in which the proportions of Euclid's geometry and the perspectives of geometrical optics are not present. We would expect, therefore, that so-called "primitive man," or man in a non-technological society, would have considerable aesthetic sensitivity and that his paintings would not embody the techniques of perspective and of three-dimensional geometrical proportions of classical Western sculpture and painting. The anthropologists who have studied him (Thompson, 1945); Mead, 1940) and the artists who have examined his paintings or music (Adam, 1940; Barrett and Kenyon, 1947; McPhee, 1946) tell us that in these judgments we are correct.

We have described our initial all-embracing experience as one from which sounds issue forth. Would it not be likely that we would be impressed more by the sounds issuing forth to us than by those issuing forth from us? This would be especially true if these sounds were those of the rolling thunder of the Himalayas. Then we might well speak, as do the early authors of the Hindu Vedic hymns, of the Maruts shouting their noisy terror at us from the sky. (Müller, 1891, p. 81).

Furthermore, since we would experience the particular instance first and come only long afterward to the class of all similar particular instances, would it not be scientifically correct for us to describe the particular instance with a proper name? Non-proper names are appropriate only for abstract classes of particular things, when the particularity of each is neglected and their similarity only is seized upon. But this means that early man was not unscientific and guilty of a spurious anthropomorphism, as many of his observers have supposed, when he described particular events with proper names. Proper names are the only accurate scientific names for describing individual events or things.

Actually, however, in our initial experience and description we have not yet arrived at the concept of a thing, least of all at the concept of a persisting, substantial thing. We sense the terrifying shout of the thunder. It does not, however, last. Thus, although it is a particular which is appropriately described with a proper name, it is a perishing particular, succeeded by different perishing aesthetic qualities or particulars. From this sensed sequence of perishing aesthetic particulars, we arrive at our first concept of time. This is sensed time. Each particular sensed sound, fragrance, or flavor comes into being and goes out of being to be replaced by its successor.

This sensed succession of perpetually created, perpetually perishing particulars is quite different from the mathematical time of Newton or Einstein's physics, with which the people in a technological civilization order their daily lives. The latter, theoretically constructed time, is an infinitely extending series which does not return upon itself. The sensed time given in a sequence of perpetually perishing sensed particulars does return on itself as the following sensed facts make clear. There is the sensed brightness which comes into being at dawn, reaches its highest intensity at high noon, and perishes at dusk. It is succeeded by the sensed darkness which begins with a minimum degree of intensity, reaches its maximum intensity at midnight, and perishes at dawn. This cycle has continued as long as men have sensed nature. Within the sensed darkness there appears another cyclical sequence of perishing images. This cycle is composed of the two-dimensional, yellowish crescent called the new moon. It perishes and in a succeeding creation of darkness is succeeded by the two-dimensional, yellowish image called the quarter-moon, which in turn, in a later sensed particular darkness, is succeeded by the half-moon, and so on through the full moon and receding quarter-moon until the new crescent appears. Thus it is that the monthly cycle of perishing particulars is known (Singer *et al.*, 1954, p. 114).

These cycles can be counted just as the cycles of day and night can be counted. In this manner an aesthetic and qualitative astronomy becomes quantitative, and the inductive concept of number arises. This inductive concept of number is, however, sensed number. It is not the axiomatically constructed concept of number of the Greek and modern technological society.

Similarly, the sequence of brightness in the cycle of days and nights is also differentiated with localized two-dimensional images. The most important of these is the two-dimensional, localized image called the sun. It appears first at dawn as a very thin, two-dimensional segment. This perishes and is succeeded by a thin portion of a bright, yellow patch which is circular on one side and rectilinear on the other. This perishes and is succeeded immediately by a larger circle, then a still larger circle, and finally a fully rounded, two-dimensional, intensely bright, yellowish patch. Concomitantly, the differentiation between earth and sky becomes evident. The intense, round, yellowish patch called the sun vanishes at one point in the sky and appears at a higher point. This goes on until high noon, when the cycle is reversed. In the next brightness of the following morning the sequence of images called the sun appears at a different point on the horizon. This point varies in successive diurnal and monthly cycles. Sim-

ilarly, it also comes back on itself. This sensed cycle is called the year. This cycle also can be counted, and the number can be related to the sensed number of monthly cycles and the sensed number of daily cycles.

Within the daily, monthly, and yearly succession of brightnesses, there are other sensed colors than those of the sun. There are the vivid greens of the initial growth of sensed plants, the golden yellows of their mature growth, the reddish browns of their decline, and the dull blacks and greys of their death, succeeded again by the vivid greens of the following spring.

All these directly sensed cyclical changes man feels within himself. He notes his introspected moods changing with these colorful cyclical sequences of the seasons. He notes also, for himself as for other animals and plants, that there is birth, youth, maturity, the fall of life, and its winter, or death, succeeded again by a new birth. And so, through the generations of the sensed biological family, the human cycle goes on as part and parcel of the interconnected, numerically countable cycles of nature.

Knowing himself and everything else thus in terms of emotively felt and immediately sensed aesthetic qualities, it never occurs to non-technological man to separate the aesthetic and emotive beauty of everything from the things themselves, after the manner of a technological civilization. Nor does it ever occur to him to think of himself as outside of nature or as an exploiter of nature. The earth is "Mother Earth." Are not her materials and the forests and other plants and animals which arise out of her, like himself fellow-members of an interconnected set of cycles? Taking this for granted, the concept of the good, common to Confucian, Buddhist, Hindu, Indonesian, and all other non-technological societies, arises—the concept of the good for man as immersion within, aesthetic sensitivity to, and harmony with nature.

Each immediately sensed thing has no other characteristic. It is a temporarily created and perishing particular. It comes into being only by its predecessor's dying. It dies that its successor can come into being. When at dusk the brightness which is day dies, the darkness which is night is born. When at dawn the darkness of night dies, the brightness of day is born. So it is with every sensed thing that is determinate and finite. Determinate, finite human beings are no exception to this rule. The doctrine of transmigration is nothing but the thesis that the cycle of sensed perishing particulars goes on for man as for other things. This doctrine does not mean that man persists as an eternal, determinate substance. Restricting one's knowledge thus to immediacy, one does not come upon the concept of substance. All that one finds is a succession of perishing particulars which return upon themselves cyclically.

The sensed fact that nothing comes into being without the death of its predecessor and that nothing goes out of being without its successor coming into being, the early native Indonesians expressed as the principle of the cosmic equilibrium. This principle affirms that nothing is ever received except as something else is taken away. To violate this principle is to be immoral in a non-technological civilization. This is why the early Indonesians and their present descendents do not feel that they can cut down a virgin forest to gain land for cultivation unless they express sympathy, through a ceremony, for the death of what they destroy and accept the trust of creating faithfully that which is new to replace the old. To exploit nature, taking from it while giving nothing back in return, is to act immorally. Similarly, when the young Indonesian takes a bride, he or his family must make a gift of a very considerable amount in return. The Dutch interpreted this as the purchase of a bride and outlawed it as slavery, thereby showing that they were looking at the values and social norms of a non-technological society from the conceptual standpoint and mentality of a technological one. The so-called "payment" of the groom for the bride is, from the standpoint of the native Indonesian, a moral requirement. Failure to give something in return for what is taken would be to violate the cosmic balance; it would be to act immorally.

This conception of man as immersed in the cyclical sequence of nature shows in the aesthetic values of a non-technological society. Instead of starting with the musical theme and counter-theme, which move linearly toward their resolution in a climax, after the practice of Western music, the tonal sequences in the music of a non-technological society are cyclical in character. There are melody and rhythm, but no harmony and counterpoint. Also, the music is not recorded or controlled by meticulous, mathematically ordered scales. Instead, it is mastered and directed wholly by ear and transmitted from generation to generation in this way. The standard with respect to which the notes of the melody are measured and ordered is also different. This standard in Hindu music is called the "drone" (Ranade, 1951; Tagore, 1879). The drone is a continuous background. It is against this constant background that the differentiated sounds of the melody rise and fall and succeed one another in time cyclically.

The drone also symbolizes something immediately experienced. We described our initial experience of nature as a "vast, spread-out, going-on-ness, . . . ablaze with diverse colors, and issuing forth manifold sounds, fragrances, and flavors." The drone expresses both the dynamism of the going-on-ness and the relatively undifferentiated character of the vast spread-out-ness. It symbolizes, therefore, the infinite timelessness out of which

each sensed particular thing, including sensed particular man himself, arises and to which it returns at death.

Early in this century William James attempted (1923, 1928) to bring scientific and philosophic discourse back to radically empirical immediacy. In doing this, he noted that it is only the portion which is at the focus of attention that is sharply differentiated into the determinate colors, sounds, fragrances, flavors, and feelings; the periphery of immediacy is vague, formless, undifferentiated, and indeterminate, one portion of it being no different from another. James suggested also that it is from this undifferentiated, indeterminate periphery that religious experience arises. This periphery is both the subject of consciousness and its object. But, being indeterminate and undifferentiated, there is nothing in it to distinguish subject from object. Thus it is both subject and object and neither subject nor object. These are the defining properties of what the Hindus call the "divine" or "true self," "Brahma" or "Atman," and the Buddhists call "nirvana." It is also the factor in immediate experience with which the divine is identified in all non-technological societies. At this point the radical empiricism of William James and the radical empiricism of a non-technological society become identical.

This all-embracing, indeterminate consciousness within which the sensed differentiations come and go in cyclical sequence is called by Hindus the "chit consciousness" to distinguish it from the differentiated, sensuous consciousness (Northrop, 1946; Woodroffe, 1929, chap. XIV). Both types of consciousness give immediately apprehended objects. One does not, however, sense the undifferentiated or chit consciousness, since sensing always involves a distinction between the sensing percipient and the sensed object. One can sense only differentiated qualities within the chit consciousness; one cannot sense the chit consciousness itself. In the case of the chit consciousness, to apprehend it is to be it; hence, being undifferentiated, there is no distinction between subject and object in the knowing of it.

The Hindus and Buddhists of a non-technological society call the cyclical sequence of perpetually born and perpetually perishing particulars, the "law of karma." This is the concept of causality in a non-technological society. The transmigration of sensed souls is a special case of it. Salvation comes for man, however, only by escaping the karma cycle. This occurs when man realizes that he is the timeless chit consciousness within which the perishing particulars of the karma cycle come and go. To realize this is to be able to accept with equanimity the death of one's sensed self in the karma cycle.

The drone of Hindu music is the minimally differentiated expression of the all-embracing, infinite formlessness and dynamism which the Hindu terms "Brahman" or "Atman." The measure of the differentiated sounds, in their cyclical temporal successions, against the continuous drone expresses the tension between the temporal and the eternal, the finite and the infinite, in man and in things for people in a non-techological civilization.

Its legal norms are of two types. One type derives from the all-embracing formlessness of things within which the conflicting, differentiated, sensed creatures come and go. Since all sensed objects are relative to perceivers, only the all-embracing formlessness is common to all men. Hence only it can provide an absolute norm for a common law. In a concrete, sensed dispute each participant's experience of that dispute is relative to him. Ethical and legal codes, therefore, which are defined in terms of sensed objects cannot give a common law, since sensed objects are one thing for one perceiver and another thing for another. How then is anything common going to be found for settling social disputes in a non-technological society?

The basic answer is that it can be found in the sole factor in immediate experience which is common to disputants—namely, in the all-embracing, immediately felt formlessness within which the relativistic objects of each particular disputant's experience come and go. This formlessness, precisely because it is a formlessness, cannot be expressed in codes. It has to be immediately experienced to be known. It is to be found, moreover, pragmatically as the Buddha teaches, in the "middle way" between the conflicting claims arising from the relativistic sensed experiences of the disputants (Warren, 1906). Mediation is the method of finding this middle way (Northrop, 1952). Consequently, as Confucius emphasizes, the moral man does not indulge in litigation. He does not settle disputes by resort to codes. Also, no dispute is settled until both parties, working through a mediator, are satisfied (Liu, 1947). Expressed in musical terms, the moral man looks to the drone rather than to any determinate ordering of the melody for the solution of his intrapersonal legal and social problems.

There are, however, certain sensed objects and relationships which seem, to most people in a non-technological society, to exist, the same for all perceivers. At this point their epistemology shifts from radical empiricism to naive realism. These realistic, sensed objects and relationships are the biological objects and their heredity of a natural history, descriptive biology. One basic rule governs their sequence through time. No child exists without parents. From this scientific law of sensed biological human life, there arises the basic, determinate, ethical rule and legal norm of a non-technological society — the tie of the family and the priority of the family to the individual. In Confucianism this is called "filial piety." Objec-

tively, it appears as the patriarchal or matriarchal joint family (Hsien Chin Hu, 1948). From this natural history, biological science of man, there arises the social ethics and codified law of what Sir Henry S. Maine (1908, p. 151) called the "law of status."

In such a society men are not equal before the law. Daughters do not inherit equally with sons, nor do the younger sons inherit equally with the eldest son. Nor are people of a different family or a different heredity stock, or tribe, treated with the same moral rules that one uses for the members of one's own family or of one's own tribe or nation.

Having based one's social ethics and law in this manner on the sensed objects of natural history biology, the sensed color of the skin of people becomes important ethically. Consequently, the idea that a good society has nothing to do with differences in color of skin is foreign to the ethics of a non-technological society. In classical Hinduism, for example, the word for caste is the word for color. Furthermore, in the Hindu *Laws Of Manu* the penalty for the same crime differs, if the offender is of one caste, from what it would be if he belonged to a different (Muller, 1886). The classical Chinese called all other people "barbarians." The ancient Hebrews, Greeks, and Romans, in the ethics of their patriarchal law of status, judged similarly.

Since the family has a head, so the groups of families in the tribe and the nation tend to have a head. Hence, the political ethics of a non-technological society is hierarchical and monarchical. The codes of a law of status express these familial, tribal, hierarchical, and regal relationships in common-sense terms.

It is to be remembered, however, that in non-technological societies the ethics of the law of status is combined with the ethics of the law of mediation. Moreover, the former is usually regarded as a second best, to be followed only in the middle stage of life when the family is being bred and nurtured. Before this "householder stage," as the Hindus call it (Muller, 1886, pp. 75-128), and afterward, the ethics of mediation, of the musical drone, and of the all-embracing formlessness take over.

Considered by itself, apart from the ethics of the law of status, the ethics of mediation is democratic rather than hierarchical and regal. This is the case because the chit-nirvana consciousness, being undifferentiated, is the same in all men. Actually, however, even in the Buddhist society of Burma or Thailand, in which there is no hierarchical ordering of the patriarchal families according to caste, there is nevertheless a king. This is achieved in Buddhist Burma and Thailand by combining the raj, the law of status codes, and the literary epics of Hinduism with Buddhism (Prince Dhani, 1947; Le May, 1938; Lingat, 1950; Muller, 1886). It is this combination of the hierarchical ethics of the family of a naively realistic, natural history, biological science and the ethics of equality and mediation of a radically empirical science that gives a non-technological civilization its codified law of status, expressed in common-sense terms, with its legal and hierarchical social values combined with a basic theory of the ultimate or true self which is egalitarian and democratic (Banerjea, 1954; Osgood, 1951).

Cultural Values of a Technological Civilization

WE have already come upon these values by way of contrast in connection with the values of a non-technological society. We noted also (pp. 1052-54) that the differentiating character of a technological society is that, in it, man knows himself and nature in terms of the unsensed, directly verified, axiomatically constructed entities and relations of mathematical physics. This frees scientific objects and their relations from sensed properties, thereby giving determinate public meanings the same for all men. It also frees ethical and legal norms from the necessity of being expressed in terms of the sensed qualities. This frees moral and legal man from a definition of his ethical values in terms of the color of his skin and the biological stock of his family or his tribe. Forthwith, the law of status is replaced by the law of contract. Thereby, meaning is given for the thesis that moral, legal, and political man is not family or tribal man but universal man.

This ethics of the law of contract generates a completely new ethics of inheritance in which inheritance rights are equal for all offspring regardless of sex or differences in age. It gives rise also to a new philosophy of education — that of equal opportunity for all. It also generates a completely new concept of the basis of political and moral obligation.

In the social ethics of a law of status of a non-technological society, the sanction for the legal codes is in the fact of one's birth within the family and in the status relationship of one's family within the tribe or the nation. The authority for such a law and the obligations to abide by it have nothing to do with the consent of those who were born into it. As Sir Robert Filmer pointed out in his *Patriarcha* (Laslett, 1949), the younger sons have never given their consent to the inheritance of the family manor house and the entire family estate by the eldest son; nor have the patriarchical families lower in the social hierarchy ever given their consent to the privileged social positions and governmental powers enjoyed by the patriarchal families near the top of the hierarchy and the royal families at the top.

In the ethics of a law of contract of a technological society, consent, however, is of the essence. Such a law, being axiomatically constructed and

hence hypothetical, has no validity, obviously, unless those to whom it is applied give their consent. This is precisely why it is called the law of contract. In a contract, nothing is binding unless the parties to the contract have consented to accept it. Furthermore, with respect to consent, and hence with respect to the obligation to obey any law of contract, all men are born free and equal. It is in this legal and contractual sense of the authority of a law resting upon consent, and not in the biological sense, that the Declaration of Independence speaks the truth when it asserts that "all men are created equal." The frequent attempts, therefore, to discredit the Declaration of Independence by pointing to the biological, psychological, and economic inequalities of men at the time of their birth is quite beside the point. Such criticism confuses the epistemological and natural history scientific basis of the ethics of the law of status of a non-technological society with the different epistemological and scientific basis of the ethics of the law of contract of a technological civilization.

The epistemology of the axiomatically constructed, scientific knowledge of a technological society has one other cultural consequence. Being deductively formulated, it defines inductively sensed, different classes of things in terms of a single class of common, elementary, scientific objects. This is but another way of saying that it replaces ethical groups of men, defined in terms of differences in color of skin or of familial and tribal heredity, with the universal moral man of the law of contract.

The very prevalent notion, therefore, that technological society has destroyed human values is quite erroneous. Through the law of contract, which entails the definition of moral authority in terms of consent rather than in terms of family or tribal status, it generates the ethics and politics of democracy. Furthermore, not merely its technological instruments and their capacity to lift the standard of living of the masses but also its democratic ethics of its law of contract have captured the imaginations and the loyalty of the masses of men even in non-technological societies. This is why they are demanding today that they be treated equally before the law in education and politics regardless of their color of skin. When they demand this, they are rejecting the familial, hierarchical and regal ethics of their own traditional law of status.

An equally significant shift occurs in aesthetic values with the transition from a non-technological society. The standard for measuring the sequence of musical sounds in the music of a non-technological society has been noted to be the drone. The music of a technological society drops the drone as its standard. In its place it puts the ratios of the deductively formulated, mathematical acoustics of the Greek Pythagoreans and Democritus. But these relations for ordering the sounds of the melody are not sensed. They are intellectually grasped, axiomatically constructed relations. Furthermore, mathematical physics works with an infinitely extending, linear theory of time instead of with the sensed cyclical theory of time. This automatically frees the music of a technological society, not merely from the drone, but also from a cyclical, temporal ordering of the melody.

But if this melodic ordering is to be an order rather than a chaos, some relation must govern it. The ratios and uniform, axiomatically constructed, flow of time defines this ordering. With such intellectual ordering, harmony and counterpoint as well as melody can enter in. For all this, however, there must be a precise, musical scale. Otherwise, again, there would be no standard, and the simultaneous ordering of sounds in harmony and counterpoint would become chaotic, as would also the uniform, temporal ordering of sound in melody. Such a music no longer describes cyclical sequences of perishing particulars against the tension created by the all-embracing, dynamic formlessness of the drone. Instead, the sensuous materials are subjected to a mathematically formal and intellectually prescribed logos of proportion and perfection. Thus it is that there arises in a technological society a new concept of the beautiful.

This more formal intellectual concept of the beautiful appeared first in the music of ancient Greece. It actualized new formal potentialities of itself with Palestrina and came to some of its richest formal fulfilments in Bach and in Beethoven.

The parallel transformation of aesthetic values appears in painting. For all its virtues, the painting of a non-technological society, when seen from the standpoint of classical Western art, is flat. Once, however, the artist grasps the intellectual, three-dimensional, mathematical proportions of the axiomatically constructed Greek geometry of solids, the flat type of painting starts moving into the round. Thence arises Greek sculpture, with a beautiful sense of geometrical proportion, but with its lack of emotive, dynamic beauty, when viewed from the standpoint of the art of the oriental, all-embracing, ineffable, infinite formlessness. With the coming of axiomatically constructed geometrical optics, the logos of the perspective combines with the logos of the regular solids to generate the painting of the giants of the Renaissance — Leonardo, Raphael, and Michelangelo. This, again, is an intellectually guided aesthetic of the beautiful.

It is interesting to note that, when with Berkeley and Hume modern thinking returned to the epistemology of radical empiricism of a non-technological society, concomitantly, impressionistic painting arises in which blurred, vivid, sensuous differentiations become the subject matter of the painter, and the axiomatically guided, mathematical laws of perspective and of solid

geometry drop out of his technique. The music of Debussy is a corresponding development in the aesthetics of modern Western music.

It is to be remembered, however, that for a period of over a thousand years, following the decline of the mathematical physics of Pythagoras, Democritus, Eudoxus and Plato, Aristotle's physics dominated the Islamic and the Western world. This physics is partially a mathematical physicist's physics, since Aristotle had an axiomatically constructed geometry and astronomy. In his physics of terrestrial objects, however, he reverted to the epistomology of naive realism, defining the physical and chemical elements in terms of their sensed qualities. Water, as previously noted, was defined as anything which one senses wet and cold. This gave Aristotle's ethics and politics a law-of-contract form with a law-of-status terrestrial content.

The consequence was that the law of contract, as initially formulated by the Stoic Romans and accepted down to modern times, was in considerable part filled in with law-of-status content. This law-of-status content of a law of contract still dominates the Roman Catholic and Episcopal thinking as formulated in Aristotelian epistomological and metaphysical terms by St. Thomas and by Thomas Hooker. This type of law of contract with law-of-status content went into the South through the First Families of Virginia, as Laslett has recently demonstrated (1949, pp. 1-43).

It was not, therefore, until Galileo and Newton returned Western physical science to an axiomatically constructed physics as terrestrial as well as astronomical objects that it was possible for Western man to have, for the first time, a law-of-contract ethics with a law-of-contract content. This happened when Jefferson, in writing the Declaration of Independence and insisting upon the Bill of Rights of the American Constitution, followed Locke's theory of natural law and the physics of Newton rather than Hooker, St. Thomas, and Aristotle.

Immediately, a technological society burst forth with new vigor and new moral content. Also, the patriarchal, hierarchical, and regal values of a non-technological society were replaced in the content of the law of contract by the egalitarian and democratic values of a purely technological society. Locke and Newton had replaced Hooker, St. Thomas, and Aristotle in the specification of the content of the ethics of a law of contract. This is what Jefferson meant when he wrote that Bacon, Locke, and Newton were his gods and affirmed that the United States was creating a political society which is unique in the history of the world (Dewey, 1940, pp. 61-62; Koch and Peden, 1944, p. 609).

The axiomatically constructed terrestrial and celestial physics of Galileo and Newton has been replaced, however, by that of Einstein, Planck, Schroedinger, and Dirac. The former physics, while axiomatically constructed, was one, like that of the Greeks, which could be imaginatively envisaged in terms of geometrical models. This is not true of the theory of relativity or of quantum mechanics. Nature as known through contemporary, axiomatically constructed, indirectly verified, deductively formulated theory not only cannot be sensed; it cannot even be imagined. The aesthetic implications of this characteristic of our contemporary technological society are already upon us. Both art and architecture have been released not merely from geometrical optics and its laws of perspectives but also from the geometrical models of Euclid's regular solids. The result in the realms of aesthetics is abstractionism and functionalism in both painting and architecture. Houses and business buildings need no longer be rigidly rectangular. The roofs of public buildings do not have to be spherical domes modeled on the circles and spheres of Euclid. Music can break loose from the restriction of ratios. Giedion, Frank Lloyd Wright, and Le Corbusier; Orozco, Picasso, and Kandinski are already here (Giedion, 1954). With them also have come the tools and the unprecedented high standard of living of a technological society. By means of the deeper understanding of nature and the more powerful instruments which axiomatically constructed knowledge gives man, the work of the world and even its most difficult mental calculations are being lifted from the shoulders and the brains of men. Thus to moral, legal, and political equality is being added the possibility of economic equality.

But with these aesthetic, ethical, legal, economic, and even religious values of a technological society, rooted as they are in the logos of an axiomatically constructed, intellectually known relatedness, there has also come a price and a problem. The basing of human relations on the hypothetically constructed constitutions of the law of contract has opened up the possibility of more than one constitution and the actuality of incompatible constitutions. In this, as well as in the conflict between the values of technological and non-technological societies, the ideological problems and conflicts of the contemporary world find their origin and their basis. It is of the essence of a contractually constructed constitution that it defines a social and ethical utopia. Utopias tend to turn themselves into crusades. When these crusades of a technological society become armed with its instrument, the atomic bomb, the possibilities are appalling. This is why the members of a technological society are filled today with both high hopes and deep fears. To understand the source of these fears is to discover the way to construct an international law which will give mankind the values of a technological society without its dangers (Northrop, 1952, 1954).

There is a second price which one pays for a

technological civilization. Its traditional fault arises from the tendency to take the emotively moving, immediately sensed, radically empirical man and world, ablaze with aesthetic fragrances, colors, and sounds as a bare starting point, to be dismissed as mere appearance when the axiomatically constructed, scientific objects and their relations are obtained and the ethics of its democratic law of contract is constitutionally formulated. This has created a modern man who has become so absorbed by the intellectual imagination, its technological tools, and its abstract legal codes that he is starved emotionally and with respect to aesthetic immediacy. Out of this half-man has come the crowds of people housed in the rigidly, rectangularly ordered streets and dull, gray buildings and slums of our huge cities. No one with aesthetic sensitivity to the immediacy of things and to the emotions within himself could ever have created or have tolerated such a thing. This is the aesthetic and emotive paradox of a technological society. Need one wonder that such a modern man, for all his abstract art, democratic laws, and effective tools, is a frustrated, even often schizophrenic, individual?

But the ethics and aesthetics of a non-technological society have their paradox also. Notwithstanding the affection of its folk for trees and all other creatures of "Mother Earth," its people, owing to their emphasis on family values, tend to produce more people than their instruments or their natural resources enable them to provide for. The consequence is, notwithstanding their affection for trees, that they eat the green twigs of the trees in order to live. In this way China has become denuded of its forests, and the rich top soil of its "Mother Earth" has been washed into the sea. The result is, not merely that millions upon millions of its trees have been destroyed, never to be relaced, thereby violating the cosmic equilibrium, but also that millions of its people die each year by starvation. The story of the non-technological civilization of India is similar. Owing to prolific breeding and for want of food, its people have turned hundreds of thousands of square miles of its once-forested or food-producing territory, extending from south of the Ganges Valley to the southern portion of the peninsula, into almost a desert. Egypt, where the situation and the cure are even more hopeless, tells the same story. This is the paradox of the ethics and the tools of a non-technological civilization.

The resolution of both paradoxes would seem to be clear. To this resolution, moreover, the analysis of the philosophy of contemporary mathematical physics is now taking careful thinkers in our contemporary technological society. A full account of knowing in even mathematical physics reveals the irreducibility and the ultimacy of both the aesthetically immediate, with its all-embracing formlessness, and the axiomatically constructed (Margenau, 1950; Northrop, 1947). Clearly, it is by specifying the relation between these two components of complete human knowledge, supplementing the one with the other, that the paradoxes of the traditional technological and the traditional non-technological civilizations are to be resolved.

Whitehead has worked out in great detail one way in which this can be done (Northrop and Gross, 1953). The writer has sketched another (Northrop, 1946, pp. 436-78). Contemporary sociological jurisprudence (Ehrlich, 1936) demonstrates also that an effective law for the contemporary world must root itself in the living beliefs, practices, and values of its non-technological as well as its technological societies (Northrop, 1952). Recently, the artist Rudolf Ray, born and reared in the technological society of the West, has discovered the art of the all-embracing formlessness of a non-technological society. The scientific, philosophical, legal, and aesthetic insights necessary to reconcile and preserve both types of civilization appear, therefore, to be at hand.

THE MONISTIC INTEGRATION OF INDONESIAN THOUGHT

Justus N. van der Kroef

The Ways in Which a Non-Technological People Relate the Phenomena of Nature to Reality

RECENT advances in the natural sciences have begun to hold the implicit promise of a view of the ultimate reality which in many speculative systems of thought, both East and West, was already old with Plato. This essentially monolithic view integrates all reality in a single, fundamental cosmic design, which relates all phenomena of nature and which includes the "phenomenon of man." Comparative religio-philosophical analysis bears important witness to this integration, and with one such integrated system, that of the peoples of Indonesia, the following pages will be concerned.

THE various islands of Indonesia and the Republic that now embraces them are the site of many distinct ethnic groups and cultures each at its own stage of development, but all exhibiting to some degree the impact of Hindu-Indian, Islamic and Western influences. However, there are also important similarities between these cultures, none of which is perhaps so noteworthy as the essentially monistic cosmology and religious value system that one encounters in varying and subtle degrees of sophistication throughout the archipelago. For the Indonesian the essence of all reality is a single, mysterious and all prevading force, which is found in all aspects of the phenomenal world, which is but its emanation. At the same time this universal primal force is understood to have a specific identity in all objects of nature, placing these objects, whether animate or inanimate, in a delicate relationship to each other. Man, a tree, an animal or a stone all encapsulate something of the primal force within themselves, but this something does not so much lead an existence apart from as conceptually distinct within the wholeness and essential indivisibility of the primal reality.

The primal force, reminiscent of the concept of *mana* among Melanesian and Polynesian groups, has many names in Indonesia and may be variously conceptualized. The Lawangan Daya of the Southern Borneo call it *doo-oos,* and all of creation operates because of the *doo-oos* within it. The Toba Batak of North Sumatra have deified the force into a "High God," referring to it as *Ompu Tuan Mula Djadi,* "the Big and Powerful One." Man possesses the *Ompu* in the form of *tondi* which determines his ultimate destiny. A special aspect of the *tondi* is the *sahala* or range of natural abilities and inclinations in man which is introduced in the womb prior to birth. After death *tondi* and *sahala* return to *Ompu,* the source of all spiritual energy, and of all conceptualized experience in nature. In pantheistic speculative notions common in Java, the dynamic ultimate reality, viewed as the all soul substance of the only God, bears the same name (*jang suksma*) as that quality in man called *suksma* or "soul," which alone has imperishable existence. It need hardly be pointed out that all such notions, whether indigenous to the Indonesian people or not, must have been and are congenial to the well-known notion of identity between *atman* (self) and Brahma, the "That art Thou" (*tat tvam asi*) of the *Chandogya Upanishad,* which has also found many commentators in the Hinduized Javanese mystical literature.

But the interpretation of the primal force of ultimate reality as operating in a differentiated fashion in all the phenomena of the cosmos raises the question of the relationship between these phenomena to each other, and to the ultimate reality as a whole. It is at this point that Indonesian monism has perhaps reached its fullest elaboration. Three factors should be briefly considered here: (1) the dialectic process of perception and conceptualization, (2) the ritual and classification systems of the Indonesians, and (3) the synthesis of conceptual opposites in the ultimate reality. The first factor is essentially epistemological and is encountered throughout Eastern speculative literatures: man's condition of consciousness, of being aware of the temporal-spatial limits of each aspect of experience, is a kind of "assault" on a dimly formulated condition of undifferentiated being. Rising to consciousness from sleep illustrates the "assault"-like function of the senses. To sense, to conceptualize or to "define" (processes which are natural extensions of each other) is to set a limit, an arbitrary limit that undermines the unity of experience and hence makes perceiving-defining man the prisoner of his own conceptualizations and symbols. Especially in Hindu-Javanese texts one encounters emphasis on the significance of Arjuna's formula for Krishna as described in the *Bhagavatgita*: "You are being, and non-being, and what transcends it." The monolithic essence of reality, called *sari* by the

Javanese, is also the objective of salvation: all the misery in the world comes from taking the material manifestations and boundaries of concepts seriously as absolutes. This makes man himself into a "thing," instead of a sojourner on the road to complete identity with the ultimate reality that is already part of us. The *Seret Tjentini,* an old Javanese mystical tract, puts it this way: "Everything is completely contained within us. We dissolve completely within and are equal to the being of God, the being which of necessity exists. Our being is identical."

MAN, then, conceptualizes, but his formulations obey antithetical design: in every instance of being the thought of non-being returns, and the cosmos thus comes to be conceptualized as consisting of entities which have their inevitable opposites. The interplay between these opposites is not only the heart of Indonesian cosmic classification systems but is also a basic formulation of the ultimate higher unity. This principle has many applications. One concerns the balancing and harmonizing of all objects and phenomena in the cosmos, especially of man's balance and harmony with these cosmic entities. All the important events of the human daily round, e.g., planting, harvesting, building a house or going on a journey, all the outbursts of nature, from floods to volcanic eruptions, and all the critical moments of human life, such as birth, initiation into the group, marriage, becoming a parent, illness and death, are occasions when the differentiated primal forces of the ultimate reality interact as opposites with man. The flood is man's antagonist, but man, too, when "opening" the soil for sowing "assaults" a status quo, necessitating the performance of rituals that will restore the stasis. Thus, while recognizing that man by his very existence (and by his conceptualizing in that existence) accentuates the differentiation and antithesis of all entities in the cosmos, Indonesian thought also describes man as realizing the danger of this and man, by ceremonial means, seeks to stabilize his relations and thereby demonstrates not an unsettling divisiveness but the peaceful unity of the ultimate reality.

The interplay of opposites is also reflected in the manner in which Indonesians categorize all objects and phenomena according to cosmic divisions. On Amboyna, in Eastern Indonesia, this cosmic division is dualistic. To one side of the universe belong such concepts or phenomena as female, white, downward, left side, West, younger brother, earth, peel, new and spiritual; to the other side belong male, black, upward, right side, East, older brother, sky, pit, old and secular. All reality is fitted into this dualistic structure. Amboynese tribal organization was also originally divided into halves, as is the Amboynese village today, and the exogamous halves stand in intricate marriage relationships toward each other. But throughout Amboynese belief there is an emphasis on a third element of higher unity, that which holds the two halves of the universe together and promotes their meaningful interaction. Hundreds of miles West of Amboyna, on the island of Nias off the West coast of Sumatra, we encounter exactly the same cosmological classification system, involving a dualistic interplay between the forces of upper- and of underworld, held together by a third, monistic element which represents the wholeness of the cosmos and its essence. Social classes, weapons, ornaments, divisions of the house, totemic symbols—all fall into the upperworld—underworld antithesis with its higher unity. Among the Ngadju Daya of South Kalimantan it is not different. The Ngadju system has been aptly described as a "dualistic monism," in which all of reality is identified with one of the two parts of which the Godhead is constituted. The deified representations of these two parts are the Hornbill, deity of the upperworld, and the Watersnake, ruler of the underworld, but the total Godhead has a name which indicates the higher unity of the cosmos, *Tambon Haruei Bungai,* which means "the watersnake which is also the hornbill." As in other Indonesian societies the interplay of opposites runs through the whole of cosmology; man and woman, sun and moon, lance and cloth, good and bad, life and death, war and peace—all have their proper place, confront each other in the daily round and in religious belief and practice.

In some parts of Indonesia the ancient monistic dualism has been refined into a more elaborate system. Among the Javanese parts of the dualistic division have become a four-fold system, with each of the four categories symbolized by one of the wind directions and possessing particular identification with metals, colors, human personality traits, professions and other, quite heterogeneous matters. Social rank no less than plant life, a rock along with a part of a house, the trait of generosity along with the blade of the *kris* or dagger, all are meaningfully brought together in an all encompassing pattern of cosmic opposites. Again the monistic element is dominant, however. The four categories are grouped into two pairs held together by a fifth encircling element which contains all colors, metals, traits, etc. It is interesting to see how this principle has found application among the Balinese, the neighbours of the Javanese. During the celebration of *njepi,* the Balinese new year festival, ritual prescribes the ancient confrontations and their higher resolve by means of the offering of certain animals according to the wind directions. To the North one sacrifices a black goat, in the East a white goose, to the South a red colored dog, in the West a calf painted yellow, and in the "unifying center" a rooster which in its feathers combines all the named colors.

THE monistic synthesis of conceptual opposites is reflected in the whole range of Indonesian belief and practice. Thus plant and moon mythologies on Seran, in East Indonesia, indicate how the ideas of death and procreation are united in thought, just as they are on Java, where "the last link" of life "is bent back toward the first" in mystical speculations. The same principle appears in the headhunting traditions of Indonesian peoples. Headhunting represents the cosmic cycle of life and death and the struggle (or the antagonism or antithesis) between the two halves of the universal round, the upper-and under world. In this struggle man participates through the headhunt in order to insure the continuity of life for himself and his group. Even in Indonesian societies no longer familiar with headhunting the pattern of a ceremonial confrontation of two groups in mock combat is preserved, the two groups reenacting the cosmic struggle of the two parts of the universe, which resolves itself on a higher level of monistic interaction where the antithesis of life and death end in the source of the one dynamic reality.

Categorizing all objects according to a cosmic classification system serves the Indonesian in folk therapy, divination, in establishing proper marriage relationships, in artistic expression and in countless matters. The unity of opposites underlies all this classification and Indonesian folklore serves to emphasize it in daily life. In the classical literature of the ancient Hinduized Javanese courts no less than in the formulas of sooth-sayers today use is made of enigmatic and paradoxical sayings (e.g. black that is white, the hidden which is visible, the rear side of a ball or round bullet), whose purpose is to fit the mind to the timeless and conceptless condition of the monistic universe in which all paradox is resolved and in which all human definition is illusory. A common formula on this order is also: "the kris enters the scabbard, the scabbard enters the kris." The magico-religious significance of the kris as an ancient Javanese symbol of the tree of life is here used to reveal the sacred essence of the one reality. Prior to creation there were no conceptual differences or definitional boundaries, only the *sari* or monolithic essence existed. This was the era when there was no distinction between the relative size of objects, such as one being larger or smaller than the other, and when, therefore, objects did not have peculiar characteristics standing in a fixed relationship to each other. This then was the time when kris and scabbard could mutually enter into one another.

Paradox serves also to describe the deified form of the monistic essence. God is the union of opposites whose wholeness is expressed by the incorporation of all antitheses within him. Mental health for the Javanese, i.e. the "wholeness" of man, lies in an understanding of and identification with the "wholeness" of God, that is, the abandonment of belief in the finality of truth of all human definitions and concepts and a return to the immaterial spiritual entity of the Godhead. The Manggaraiese of West Flores, in Eastern Indonesia, designate their God with such terms as "Father Above—Mother Below," "East and West," "Sun and Moon," and "Upstream—Downstream," denoting a synthesis of concepts and symbols found virtually everywhere in Indonesia and extensively expressed in drama and literature. In the Javanese *wayang* (or folk shadow play), for example, those puppets which represent ancient tribal heroes, and thus are closest to the deified, ancestral source of existence, invariably are called by paradoxical names: "He is the courageous leader with the utmost cowardice" or "He is the fleetfooted doe that goes like a turtle."

IT remains to note that these monistic concepts have continued to find followers today in various Indonesian religious currents, one of which, the socalled *Subud* movement, may perhaps be briefly touched upon, since *Subud* has recently opened its centers in other parts of the world, including the United States. *Subud* is derived from the words *Susila Budhi Dharma,* a Sanskrit phrase which might be translated as "the rightly lived life of man according to God's law." These words are the title of a lengthy mystical poem written in the 1940's by *Subud's* founder, Mohammad Subuh Sumohadiwidjojo, more commonly known Pak ("father") Subuh. Pak Subuh was born in Java in 1901 and at an early age experienced various visions producing an "inward working." The *Subud* movement which was formally organized in 1947, is marked by socalled "openings" or spiritual experiences, after which participants are said to enjoy a great sense of peace and inner harmony. The essence of the *Subud* practice is the so-called *latihan* or training which appears to consist of simple yoga-like exercises.

It is in the *Subud* doctrine that the monistic character is perhaps most fully expressed. According to Pak Subuh the word *Subud* has a distinct meaning of its own, i.e. "That which proceeds from God returns again to God." A more elaborate cosmic classification schema than one ordinarily finds in Javanese tradition is also used in the *Subud* emblem, which consists of seven concentric circles transected by seven radical lines, making for "forty-nine different stages, stages or conditions" of the total spiritual and material reality. Within the *Subud* emblem, but impossible to depict, is "the primal essence" called the "Great Life Force," identification with which is the objective of the *Subud* practitioner. In Pak Subuh's treatise *Susila Budhi Dharma* there is a direct attack on human processes of conceptualization. The scientific achievement of modern man, based on

dialectical procedures of definition and differentiation, has led to "the exclusion of inner sensitivity" and a "lack of inner peace." Abandonment of "thought and imagination" is the *sine qua non* for attaining "spiritual consciousness." The influence of material creation and the attraction which it holds for a man, be he a scientist intent on categorizing the material phenomena or a merchant greedy for the wealth of this world, tends to make him a prisoner of the material world in thought and action. Man cannot abandon his place in the world, argues Pak Subuh, but his spiritual consciousness will forever elude him if he remains the slave of "the action of material forces." For Pak Subuh the creation is essentially monistic, thus, what a man eats will determine his personality. "Vegetable essences," for example, influence human destiny: "those who live on rice exclusively tend to become weak-willed and narrow-minded," while "the hard sheath of the bamboo," when eaten by man, "produces a tendency always to be finding fault." The meat of fowl and other animals likewise structures the personality (e.g. after eating goal's meat "the goats' tendency to get lost will manifest in the man as the desire in all circumstances to follow his own impulses.") Upon considering such animistic rationales, typical for Javanese monism, it is perhaps not surprising to read that according to Pak Subuh, "In the world of fishes there are many that serve God with faith, and, moreover, are not neglectful in the manner of their prayers and supplications for felicity in their lives," or that "In the state of their emotions the fish in the irrigated paddy fields do not differ in reality from the state of men on earth."

To a Western mind such animistic assertions can have but little appeal, but it is well to emphasize that no foreign cosmology has had much influence in Indonesia unless it fitted itself, at least in its initial stages of contact with the Indonesian world, into the monistic rationales of Indonesian thought. A case in point is Islam in Indonesia. Indonesia is nominally a Muslim country, but the form of Islam that is there popular among the mass of men has been closely interwoven with indigenous animistic and monistic traditions, to such a degree, in fact, that Indonesian Muslim purists continue to arouse socio-religious tensions by insisting on greater orthodoxy. In its spread over the Indonesian islands Islam won converts primarily by means of its more controversial mystical dimensions, and it was precisely the mysticism of Islam that proved to be the most important point of contact between the indigenously Indonesian and foreign Muslim cosmologies. Thus there emerged in Indonesia a nativistic Islamic literature, produced by indigenous mystics, for whom Koran and Hadith were primarily new sources for the interpretation and sustenance of the traditional monistic cosmology. In its more sophisticated forms of expression this literature is the equal of Islamic transcendentalism anywhere in the world. One thinks here readily, for example, of Hamzah Pansuri, the seventeenth century Indonesian Muslim mystic, whose monistic flights of interpretation cost him the condemnation of Islamic clerics at several orthodox courts. For Hamzah, identity is illusion and reality is indivisible. "When they look about them," he once wrote, referring to the special devotees of Islam, "all that they see is they themselves . . . according to those who have reached the truth, the world is identical with themselves, and they are not of two different magnitudes. When all creation is identical with themselves, then it can't be otherwise than that they see themselves in everything."

With the integrative tendencies evident in the modern sciences these monistic traditions in Indonesian thought may perhaps be of more than passing interest. But whatever their value, there can be little question that they persist today as the principal mold of indigenous religio-philosophical reflection and cultural dynamics in the world's largest island republic.

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Dr. van der Kroef was born and largely educated in Indonesia, although he received his Ph.D. from Columbia University. His most recent research in Indonesia was in 1955-1956. He is the author of a number of articles on Indonesia and Southeast Asia, and of two books, *Indonesia in the Modern World* (2 vols., Bandung, 1954-1956), and *Indonesian Social Evolution*: Some Psychological Considerations (Amsterdam, 1958). He is at present Associate Professor of Philosophy and Sociology at the University of Bridgeport.

Social and Spiritual Values in the Arts

THE "Aesthetic Values in the East and West" are discussed at length by Van Meter Ames, head of the department of philosophy, University of Cincinnati, in a paper which was presented at the Third East-West Philosophers' Conference held at the University of Hawaii in June-July 1959. It appears in the Fall 1960 issue of *The Journal of Aesthetics and Art Criticism,* and will be included in *Philosophy and Culture — East and West,* the conference volume to be published by the University of Hawaii.

Professor Ames' intention is to explore and identify Western philosophical attitudes toward art, and to lay these beside the Eastern approach to aesthetics. In his introduction, the author notes that philosophical interest in art in the West goes back to Plato, but that many Western philosophers have not taken art seriously. When Western thinkers have found art important, they have often been formalists, seeing the value of art as divorced from other and (to them) lesser values of life. Or art has been considered to have spiritual value not in its own form but only as it serves a religion or an ideology. Still others have held that the spiritual value of art inheres in clarifying and intensifying values which are already there in human life. Thus there is no one philosophical attitude toward art which is distinctively or characteristically Western. But since the rise of modern aesthetics in the 18th century, notably with Kant, Western philosophers have taken art more and more seriously.

The different ways in which the spiritual value of art has been understood in the West, in relation to other values, can be explained with reference to form. Form is such a basic and inclusive term in Western aesthetics that Ames uses a consideration of its meanings as a comprehensive approach to aesthetic values in the West. As he explains, form has meant the shape of the work of art. But the effort to confine an art object to its own outline has been met by the realization that a thing of art reaches out to the response of the appreciator, expresses the values of life, and may have influence throughout a culture. Although some philosophers have been strict formalists, others, like John Dewey, have seen art as an organizing, expressing and celebrating activity in the midst of the on-going affairs of everyday; thus it is spiritual because it brings freshness, freedom, creativity into the world; it is life-giving.

So far as the last point is concerned, philosophy of art in the West has been divided, for many, between "art for itself as self-contained form and art for life as the form of life most alive." The position taken by the author in this paper is that "the aesthetic belongs with the other spiritual values, the good and the true. The aesthetic, in being social, is inseparable from the scientific and the religious. Not only do all these values go together; a deepening understanding of them is bringing East and West together." And he points out that the meeting of East and West comes easily in science, subtly in art. Foreign thought and religion need to be studied. But the forms of art are there for all to see. Anyone familiar with the structures of his own culture may go from West to East or from East to West and become sensitive to what he finds. "He will begin to see that other sculpture, painting, architecture, and music are formulations of human experience. He will realize that, the world over, there is common endeavor to achieve satisfactory forms. . . . Although hurry, slackness, lack of energy or insight, lead men to stereotypes, the zest for expression is perennial. The question is whether art comes to the full in the design of the artwork itself, as formalists hold, or whether form that is vital serves to organize and order thought and feeling about the human situation, to focus and *form* the values of life that, in becoming artistic, do not cease to be social, scientific, and religious."

To enlarge and fortify this thesis, Ames discusses the concept of form as it has been developed by Western philosophers and expressed in the writings of many in the East. It is also considered from a number of different points of view, which space will not permit us to detail except to say that there are sections on form versus sensuous and emotional appeal, form versus expression, form versus association and representation, form versus functional and moral aspects, and form versus the social and scientific approach to art. In all these sections the author displays more than just the scholarship one would expect; he also exhibits considerable perception of Eastern attitudes. For example, in discussing the Indian *rasa,* a term used to mean the essence of an art at the level of ideal beauty, enjoyed intuitively, he points out that the *ragas,* in every Indian art, characterize the factors of emotion and technique; these forms are devices used to achieve the response of *rasa.* Their purpose is thus to raise art beyond natural, personal, sensuous pleasure in the beautiful to a level which is universal. This conception of aesthetic experience as that which enables divided beings to glimpse a divine and universal harmony still dominates in India today. The author gives like attention to aesthetics in China and Japan, and

consideration to the influence of Zen.

The concept of form in its larger aspects of structure, of order and of expression has implications which stretch out to include all life as well as art, if indeed the two are separable. As Ames points out in his conclusion, "It seems more adequate to regard form in the broad and vital way of interfusing sensuous materials, expression, function, and the rest. Then form, instead of being an isolated element in aesthetic experience, becomes the organization of all that is actually involved." Thus the way form is spoken of in athletics is revealing for aesthetics, if art is not regarded as something finished and done, but is instead appreciated as an activity, a process. "Form that makes life and art worthwhile is a rhythm of organizing energies, of meeting situations freely and resourcefully. . . . Then form is not something isolated or abstracted but the feel of a career. Then sense and emotion, expression, association and function are not added to form or detachable from it, but inherent in it, constitutive of it. Then form is how something is done when done well."

This is the substance of recent aesthetics in the West, especially in the United States. The view owes its new orientation in considerable part, according to Ames, to the influence of modern science and scientific method. He writes, "The spirit and method of science seem as important as its achievements. Its main result is that morality is made a matter of sharing the world with all people, through what men more rapidly come to know and know how to do. Science, by unbelievably increasing human power for good and evil . . . makes the moral and social side of religion paramount. In spite of belated efforts to revive theology, American philosophy has moved away from it to interest in the practical, social and aesthetic aspects of religion.

"While the true becomes a matter of what scientists are doing, and the good what morally or religiously motivated people do about social problems in a practical and co-scientific way, the beautiful, as once contemplated in a subject-object relation, becomes what artists make and other people make of their making. . . . Doing, making and re-making are much the same in art, science, and society. So American philosophy of art joins with the philosophy of science, with ethics and philosophy of religion, in social philosophy.

"If this blurs distinctions between religion, science, and art, it is better to see how they overlap in life than to separate them academically. For Plato the values of the good, the true, and the beautiful were indissoluble. Today the religious, the scientific, and the aesthetic belong together as the social or spiritual values. These are the free and interweaving reaches of life when it is creative, appreciative, and critical. Neither religion, science, nor art would be spiritual in and by itself, apart from human use and fulfilment. . . . Spiritual values are the vital interests and activities of human being when criticized and tested in knowing, sharing, and recreating the world. . . .

"While the physical sciences and technology are releasing people from age-old necessities we are in need of social sciences and techniques, and the work of religion and art, to help people keep from wasting the freedom thrust upon them. The pressing, practical, and actual question, next to that of avoiding universal catastrophe, is the use of leisure. . . . Violence is rising for sheer lack of imagination, inability to see an appealing alternative way of using energies and urges. William James spoke of the need for a moral equivalent of war. We also need an aesthetic alternative to boredom. . . . If the West in general does not wake up to the widening opportunity to pursue artistic interests, then, instead of demanding that our Oriental friends explain why their countries did not develop science sooner, we in the West must explain why, even later, with the leisure provided by science, we do not write more and better poetry, and why we do not find in the forms of art the inspiration to *form* our lives more humanly."

—E. B. Sellon

Beetles and Lobsters — Rockets and Computers

THE September 1960 issue of *Science* presented an article which dealt with some of the problems which beset Air Force biologists. The author, B. G. Holzman, who is a brigadier general in the U. S. Air Force, and vice commander of the Air Force Research Division, Air Research and Development Command, states that it is hoped that the present research into the mysteries of a myriad life forms will provide clues for improving missile detection and computers. The general also points out the far-reaching civil and humanitarian values which may result from the increase in knowledge of the fundamental workings of the life process. Certain medical implications are well-known; less well-known is the potential application of biology in engineering. As the author states:

"Engineers now look with renewed interest on the ways nature has solved her communication and control problems. Nature has served as a vast laboratory for over two billion years and has made uncountable experiments. This vast evolutionary process has resulted in a fantastic wealth of animal types, many with unique and highly developed characteristics far beyond those of man. . . . The comparative approach to the solutions of biological problems has been a profitable strategy in the past, and will undoubtedly be expanded as biology becomes a more quantitative and analytical science."

The author stresses the almost incredible variety of the life forms now under scrutiny by the

research biologists of the U. S. Air Force. He writes: ". . . when my scientists in the Air Force Office of Scientific Research report studies in which bats, beetles, electric fishes, octopuses or bobolinks have been used, we are met with either tolerant amusement or slightly veiled ridicule, and in official circles, up to and including congressional levels, we seem to evoke incredulity, alarm, or special inquiry.

"I am therefore reluctant to admit that our interests also extend to blind fish, waltzing mice, congenitally deaf cats, eels, ants, locusts, lizards, porpoises, crickets, scorpions, praying mantes, fighting fish, newts, spiders and toads, to mention only a few." The author admits that he sometimes envies his scientists in physics, mathematics, and chemistry, who can report with relative impunity on the inanimate objects of their studies, since their reports are usually received with solemnity and respect, if not with understanding. He remarks that paramagnetic resonance, neutrinos, magnetohydrodynamics, . . . etc., are nothing to joke about, even if eyebrows might be raised over such things as Lie groups, pi mesons, Love's theory, Green's function on a Brown Space, or the backside of the moon!

The overall purpose of this biological research, states General Holzman, is not to provide mere imitations of the components of nature's systems, any more than our use of the aero-dynamic laws employed by the birds implies that we must build airplanes out of feathers. "It is the laws of organization and information processing that we are most in need of," states the author. "And if we get ideas for better components, that will be an added dividend."

General Holzman pleads for patience with the Air Force biologist when he uses strange specimens of animal life. He lists some of the implications in uses of animal sensing devices, some of which have been reported elsewhere, and the list is an impressive one. Space will allow only a few to be mentioned here.

"For example, a mathematical model of the beetle's vision is the basis for the development of a ground speed indicator. The use of ultrasonic cries for echolocation by the bat is well known, if not yet fully understood. Its precision, speed, and freedom from interference make this a profitable system for study by the physicist, not only for military purposes but as an aid to the blind. The sensitivity of the moth's ear in intercepting hostile bat sounds surpasses that of our most advanced microphones. The sonar system of porpoises and whales has been little studied, but evidence indicates that they have a highly developed and accurate location sense combined with a high degree of intelligence and ability to communicate. An institute is now being formed in the Virgin Islands dedicated to the study of those animals.

"The rattlesnake is equipped with exquisitely sensitive temperature receptors, [which] will respond to an increase or decrease of 10^{-11} calorie (small) in 0.1 second, which represents a change in tissue temperature of 0.001° C. . . . Certain insects have highly developed smell receptors. . . . Hairs of various flies are amazingly sensitive to certain chemicals—some to salt, some to acid, some to alcohol. Spiders and some insects have mechanoreceptors by which they can detect minute vibrations, which they use for localization of prey or enemy. The lobster has a beautifully designed equilibrium sense organ, which is sensitive to movement in various directions, to maintain position in one or another plane and to vibration. The antennae of flies contain mechanoreceptors sensitive to a wide range of frequencies. This sensitivity permits analysis of each wing beat, with a delay of only 1 millisecond."

Biology teachers might do well to make this article, which is but briefly abstracted herein, required reading for their students. It is a testament to the wisdom and wonder of life itself, with its adaptability, inventiveness, and capacity for learning. *—Alan Mannion*

NEWS AND NOTES

FOR about a century it has been growing ever more clear that as technology advances the lives of individuals and of societies are being transformed haphazardly. A device is invented, perfected and marketed because it affords both immediate benefits, real or apparent, and the prospect of ultimate profit. Subsequently its social, economic and political consequences are dealt with by whatever means are expedient or traditional. The automobile, for example, is let loose on society and, along with its undoubted advantages, converts a kindly people into the most homicidal nation the world has ever seen. Furthermore, it creates a great load of private debt through instalment buying and public debt through the necessity for road building, parking

meter and signal installation, and traffic control. Such a device thus creates continuing psychological and social changes, and, in general, constitutes an unpredictable force altering the social structure.

The hope has been that from such large and small physical changes the betterment will finally be such that—with a concurrent dissemination of aspirational ideals and *mores* — a new society will be brought into being, the agency for the cultural advance being the secular school and college system. Literacy is indeed coming to be universal; specialization for jobs and professions is becoming intricate and diversified; preparation for professional leadership is becoming expensive, long drawn out, and uncertain in its efficacy. However, the system seems to become more and more ineffective in communicating insight and serenity, in prompting originality, releasing creativity, and strengthening civil courage.

Moreover, history affords no previous example of the achievement of security and leisure and culture for all, and therefore there is no assurance that the good society will emerge if and when most of the middle class has become economically the upper class, and when automation has freed from industrial and economic servitude what will then be left of the laboring class. It is a hope which buoys us, not a well-coordinated conscious plan to ensure the improvement of economic and political institutions so that gains from technology will be distributed to all alike, and education will be able to make human life meaningful in terms appropriate to a secular educational system.

For one obvious reason Progress (as the current procedure is often called) cannot be planned: Men must be free if they are to be creative and inventive. Hence for a long time a trial-and-error social and political policy for new inventions alone has appeared feasible. Old institutions, such as the courts, and new ones, such as commissions on foods and drugs or communications or power, are improved or brought into being to protect society from the worst and to try to ensure for it the best results of all this ingenuity.

So long as Progress could be confined and more or less well directed within national boundaries, the immediate consequences have not been too disastrous, although the ominous creaking and occasional breakdowns of the economic apparatus and the groans of a wracked and debt-haunted political system have certainly not lessened. There is an uneasy feeling about that we may be mortgaging posterity, or putting together piecemeal an unworkable economic system, or unwittingly creating political pressures prejudicial to that very freedom which we have been employing and enjoying so eagerly.

But now Progress has assailed the planet as a whole. Atomic fission has been let loose upon mankind, monkeys, mussels, melons and mixomycetes alike. Already the pressures, psychological, physiological, social, economic, political and military, are nearly unbearable. Institutions which can ease all this into human life do not exist, and cannot be very easily or quickly created. Expediency, custom, and aspirational ideals will still be expected to cope with the problems. Since it is, at this world level, not very easy to govern creativity and invention, even if we should want to do so, cheap atomic power may be expected to become available before long. What then? Taken by themselves alone, the economic problems of peace are already more ominously a challenge than the economic consequences of war.

As to education, since we cannot as yet plan Progress, and since it has now got almost completely out of hand, a very old issue has ceased to be academic and has instead suddenly become intensely practical and desperately urgent. For since it is now possible for us to obliterate ourselves, the question arises: Has man any function in the cosmos? If not, why bother? If yes, then how is that function to be ascertained?

The answer to those questions depends in turn upon a venerable issue—"What exactly is the *nature* of man?"—which can now be attacked afresh. Fortunately there is now available a new procedure by which a fresh start can be made to answer this more primal question. The method is to concentrate upon philosophical research the very same intellectual skill which has been so successfully applied to the kind of technological invention mentioned above. For the inventiveness which has led to such devices as artificial satellites and atomic power would have been impossible had there not preceded them a *special* development in physics styled technically deductive-exact science.

The present proposal can therefore be put quite simply: What *precisely* — not generally — was evolved in man, as mind and as a creative being, that he could produce the inventions which are doing all these drastic things to him? What else is there in us, as yet not called into use, which is *allied* to that singular resource employed so successfully in physics as an exact science? Can we, through a new kind of education, rouse and use those new powers which may reasonably be expected to be there, concomitant with their scientific aspects, in the human potential?

Today, the technologies derived from deductive-exact more than any other science—and certainly not from simple mechanical inventions—coerce us. It is mainly to these that we respond with social and economic and even political adaptations. In addition to these stresses and strains they put on persons and societies, they promise to afford prodigious benefits. This very same exact science may be counted upon to make possible and indeed inevitable a new world of leisure and security. Since these appear to be certainties, it seems timely to make effective efforts to gain the insight that will be needed when that secure leisure will

offer the temptations that tend toward sensate degradation in opulent societies. The method for this inquiry, and even some of the beginnings of conceptual content, are immediately at hand in physics.

From the foregoing it follows that there is a new educational opportunity and hence duty. The development of deductive-exact science in physics has made a re-orientation in all other departments of science both possible and necessary. It leads likewise to a fruitful re-evaluation and reorganization of the major aspects of the humanities, notably the arts, philosophy, and language studies. Since exact science technology is also putting pressure on individuals and is re-shaping the old social order, the schools and colleges are called upon to find out exactly and to teach clearly appropriate new courses of study.

These are large assessments, but they are soberly made, and can be justified in two ways: by documenting this form of science sufficiently to make its strange character clear; and by setting forth, in lay language and with visual and other experiential illustrations, the outlines of a program of research which is designed to carry this method over from the sciences of matter and energy into those of life and its functional forms; and so on to man and his works.

For education, an objective of such research should be to articulate the newly won and clearly implied future insights to be derived now and later from such a program. In order to show how urgent is such study, a few references to the place of exact science in the contemporary scene may be first usefully made. They may afford final conviction that the power of exact science to bring about physical and social changes is so menacing —and so promising—that it can no longer safely be allowed free rein, as a coercive force alone. It is necessary to get at its intrinsic meanings as well. They are startling and promising. Only when mechanics, thermodynamics, and the industrialism of the 19th Century are compared with the new sciences of field forces and nuclear energy and their technologies do we see the vastness of the potential of the latter for good and ill for mankind. Dramatically different and deeply significant are the consequences for philosophy of the shift of emphasis in physics from matter and energy to matter as a concentrate of energy and the emergence of knowledge of wholly non-material and supersensory realities.

—F. L. Kunz

The American Institute of Biological Sciences, with support from the National Science Foundation, has embarked upon a program of foreign biological literature translation. The first phase of this program is the translation of Russian biological journals and monographs. It is hoped that this material will aid biologists in research, prevent duplication of work, give some idea of the work being done by Soviet scientists in the field of biology, and also bring about a better international understanding among scientists.

Because of the support of the National Science Foundation, the AIBS can offer these translations at a fraction of their publication cost, with even further price reduction to AIBS members and to academic and non-profit libraries. This reduction, the AIBS feels, places the translation within the reach of all biologists. Additional information pertaining to this program may be obtained by writing to the American Institute of Biological Sciences, 2000 P Street, N.W., Washington 6, D. C.

A new Indian journal of considerable interest is *Seminar,* published monthly from Bombay. Inaugurated in September 1959, *Seminar* discusses a single problem each month in symposium fashion. A problem is posed and certain relevant questions are raised, and writers who represent different persuasions and points of view then examine the problem from as many aspects as possible. Each number is devoted to a subject under discussion; the entire editorial content and even the books reviewed are linked to the topic in question. A further useful feature is the inclusion of quite extensive bibliographies to supplement the issues in view.

Seminar tries to constitute itself a platform from which matters of importance to the Indian people may be examined impartially. India is today in the peculiar and difficult position of a new country with an old culture—or rather, a number of old cultures. She has many diverse population elements with varying religious, linguistic and ethnic backgrounds. It is inevitable that these should compete with one another for influence and acceptance, and that there should be vocal and even passionate advocacy of the adoption of special regional customs on a national level. Newspapers and journals usually do not achieve a national circulation because of language differences. English (in which *Seminar* is published) has been the official language of the Union Government and is still the lingua franca of academic institutions, of science and technology, and indeed of educated communication throughout. There is, of course, great pressure to substitute one of the indigenous languages, probably Hindi, yet the transition presents many obstacles. A very large portion of the Indian people does not speak Hindi as its natural tongue, nor use Devanagari as its script. A controversy rages over the question of making Nagari or Roman the universal script for all spoken languages; both present problems but both have their advantages. (The whole question of a language for India is the subject of the July 1960 issue of *Seminar.)*

Although a journal of this kind is experimental and therefore naturally presents some uneven-

nesses, it promises to be of great usefulness. This would be true in any country; the issues which face all of us are so complex that they deserve an impartial discussion and as much background as possible. But in the case of India this is especially the case, for in that country there is unfortunately a division of ideas and a growing preference on the part of writers to contribute to publications where their thought is on home ground, so to speak, safe from contradiction and attack. It is therefore important that there should be some publication where it is possible to read opposing viewpoints. The symposia so far have dealt with questions mainly of political or economic importance. Without question these are the immediate problems; the urgent needs in India today are connected with food, housing, living standards, industrialization, and so on. But just as basic is the matter of the conservation and revitalization of her own cultural values. India has taken the democratic road to socialism, which means that there is no intention to plough under the cultural heritage. Prime Minister Nehru has emphasized this often. *Indiagram,* issued by the Information Service of India, in its release of September 23, 1960, reports the Prime Minister's speech of September 15th, in which he strongly stated his position that the most important task facing India is that of combining progress in science and technology with conservation of traditional Indian values. He pointed to the examples set by Gandhi, Vinoba Bhave and Dr. Visvesvaraya, who were all typically Indian and cherished the past but at the same time welcomed the revolutionary character of modern social and technological reform. And he in particular emphasized Vinoba Bhave's statement that today politics and religion (which are too often divisive factors) must be replaced by science and spirituality (which know no boundaries of creed, race or national origin).

The greatest issue in India today (as elsewhere) is the integration of contemporary thought with inherited insight. It is to be hoped that *Seminar,* while confronting specific problems, will not neglect this larger problem which is so important to India and to the whole world. —*E. B. S.*

The Affluent Society—

Recommended, a Second Look

Ed. Note: The American domestic economic origins of the world's present political distress need far more, and more searching, discussion than they can hope to get during a Presidential election year. In 1961, and for years to come, the final mastery of economic fundamental controls by the political authorities is bound to be an issue supplanting in centrality the principle of the mastery of the military by the civil power. Already the various quasi-judicial Executive branch agencies have been found vulnerable. We print below a summary of some of the main points in John Galbraith's book, *The Affluent Society,* in the hope that the clarity with which the book dealt with this great issue will serve to remind the reader that it is as timely today as it was yesterday or the day before.

THE people of the USA belong to a rich society living by a poor man's rules. The rules which our forefathers used to deal with their world of bleak poverty still guide us today. The results of living by a theory of economics that is no longer true are great. We pursue goods and more goods with a compulsion that could only come from the conditioning of being poor for centuries.

What are the antique codes that we follow? 1. Increased production of private goods will solve the problem of economic and national security. 2. Public goods and services paid for by taxes are inferior to those produced privately for profit. 3. The free and competitive market for labor, capital, and goods is best. 4. The best way to expand production is through a more efficient use of labor and capital. 5. Economic insecurity is necessary for efficiency. 6. Control of the monetary supply will stop inflation. 7. The way to happiness is to be found through the production and owning of more and better goods. The American way of life is the pursuit of an ever higher standard of living. Success means riches and all that riches can buy.

Galbraith proceeds to show where these old ideas have led us. Production for the sake of the goods is no longer urgent. We need the production for the jobs it provides. Automation is feared instead of welcomed. Our attitudes and habits also make the production urgent. Full employment is more important than the goods produced. To get full employment with our present economic rules we must face three potent results — *inflation, expanding debt, and poor social balance.* All of these place us in a poorer position to compete economically or lead in today's world. There is some question as to whether we can afford peace or defense. If we can't solve our own problems how can we help or lead others? Full employment provides the basis for high demand and profits which cause

strong unions to ask for wage raises which in turn cause the companies to raise their prices. Inflation and price increases have become normal. In order to sell all the goods that are produced, it is necessary for people to go into debt faster than their incomes rise. As a result, many people live in fear of the bill collector and unemployment. If people become saturated with the increasing din of advertising or refuse to go into debt any further, full employment will be impossible. The products could not be sold. The methods used to expand debt (low down-payment, longer terms, easier credit) cannot continue to be liberalized indefinitely. Continued inflation also has had serious consequences in other societies.

Since debt creation by producers and consumers is the greatest uncertainty in our economic behavior, it follows that some built-in method of maintaining the level of spending is needed if the economy is to be stabilized. Galbraith recommends that a stabalizing influence could be provided by a Cyclic Graduated Compensation for the unemployed in which the level of payments would rise as the percentage of unemployment rose. When unemployment was low, individual payments would be low.

Inflation could be controlled better if there were wage and price controls and there was a reduction in demand. These two remedies conflict with points 1, 3, 4, 5, and 6 of our economic conditioning. Thus inflation continues and those who live on fixed incomes or who do not have strong bargaining positions (the aged, retired, and public servants) suffer. Increased production has not solved the problems of security, inflation, expanding debt, and social balance. Our annual increase in wealth is not available to add to our defense or stability. The increase is absorbed by the consumption of private goods because advertising, our desire to emulate, and our traditional attitudes have combined to persuade us that this should be so. Schools, jails, roads, hospitals, and mental institutions are crowded and the increased wealth is not available to improve the situation. Our material power is not available to restore social balance or aid the under-developed countries. Private consumption takes an ever bigger percentage of the national wealth. The percentage of our wealth that we spend on education is less now than it was 20 years ago. We cannot compete with the communists in some fields because of our economic patterns. If the supply of money was curtailed sufficiently, inflation could be stopped and a depression started. This remedy would conflict drastically with 1, 3, 4, and 7. A greater investment in the education of individuals, research and needs that do not have to be manufactured — namely public services — would give more stability to the level of spending and a possibility of solving the problems we face. Education and research are the best means available to promote the evolution of individuals and society. The American Heritage includes more than the poor conditioning that men should act selfishly in the market place. There is also the faith that it is possible to learn the cause of their problems and that free men can act together for the common good.

The above will show how pertinent to the issues of 1960 Galbraith's book continues to be; it can only be hoped that it may eventually influence our legislators. The author points out clearly how inadequate is the present social balance between public services and private goods. We produce cars faster than the roads to drive them on, beer and cigarettes faster than the medical facilities to handle their adverse effects, air, water and mental pollution more rapidly than treatment facilities, wealth faster than policemen to protect it. Our present problem is not one of subsistance but of balance. The ways in which we use our abundance are, or should be, a matter of national concern. "To have failed to solve the problem of producing goods would have been to continue man in his oldest and most grievous misfortune. But to fail to proceed thence to the next task, would be fully as tragic."

—John Roberts

REVIEWS

Toward a Society of Knowers

IN his most recent book, F. S. C. Northrop brings to a focus on our explosive world the unmatched analytical instrument which he has so patiently perfected. *Philosophical Anthropology and Practical Politics,* A Prelude to War or to Just Law (Macmillan, N. Y., 1960, 368 pp. index, $6.50), will be must reading in the U. S. and in Chancellories round the world. This work, written with the aid of a grant from the Rebekah Harkness Foundation to the Foundation for Integrated Education, forms, with his other books, needed substance for that reintegration of the sciences and the humanities so long overdue on campuses. Universities supply knowledge, but not one of them (so far as the present writer knows) requires of faculty and affords to all students enlightenment as to *how* we know. Since man's natural supremacy and his present physical and spiritual jeopardy alike derive from his status as a knower (which the linguistics of his very name, man, in Indo-European forms declares), the neglect and even explicit rejection of

this essential study is a betrayal of the citadels of the nation to our real enemy, ignorance. If ever self-education in epistemology were seriously undertaken by a university faculty, the campus would be unified, and the whole nation eventually fortified. The long and stubborn refusal to concentrate the core of higher education upon understanding of ourselves is a serious default. We remain a rabble, uncertain of ourselves, our cosmic function, the meaning of life—a kindly and hopeful people engaged in feverish technological progress toward terrifying peril.

Northrop's prescription is now well-known, if not widely enough employed. It is that since experience is sense-conveyed to the psyche, it is of necessity aesthetic: a blue gives rise to blue-ness, a concept by intuition. These are the local signals from that which is, in fact, the aesthetic undifferentiated continuum, somehow *felt*. Some of the continua (force fields, for example) are also *known*, as such, indirectly, but with certitude—through postulational, deductively structured, empirically justified exact science. In between these lies the vast body of that which (for most people) passes for science, but is, by its very nature, only approximate. "Common-sense or natural-history scientific knowledge, which restricts itself to concepts by intuition and mere fact finding, has descriptive, but practically no predictive, power. (page 29) All this, and much more, will be found in the first two chapters.

The author then re-examines the acute theories applied by McCulloch and Pitts, and by Rosenblueth, Wiener and Bigelow, to the workings of the brain and of the nervous system, in man. The present reviewer has long hoped (and Northrop, Burr and others have striven) to find in experimental biology and neurology evidence of field forces at work in these life-systems. (At present only matter, not life, can be derived by science from the real, the continuum.) Perforce as of today the argument must be restricted to the physical aspect of that test object which we call the human body, in which are trapped the contents of the reverberating circuits correlated epistemically to the (real) man's "covertly or consciously affirmed and entertained philosophy." (page 71)

Having in these terms now described man as the knower, Northrop is in a position to turn (Chapter 5) to the correct concept of a nation of humans: an agglomerated population of people experiencing, obeying customs and laws, and knowing actually in a proper sense very little in common, but rather agreeing upon their conglomerate of experiences, beliefs, hypotheses, statistics, and the like, held together by contractual law. In Chapter 6 he uses the descriptive methods of cultural anthropology applied to the living law to discern in any society both its inductive and its postulational-deduced components. In Chapter 7 he considers the evaluative aspect, and applies the argument to the issue that is crucial to the creation of international law. He is dealing with Hitler's norms (in *Mein Kampf)* and those of any free democratic society in its Bill of Rights, protecting minorities. Is there a cognitive method of evaluation which both parties must agree upon? "That there is a method for doing this, providing one assumes the descriptively true normative premises of a free democratic society with its legal Bill of Rights protecting minority groups, no one is likely to deny. Conversely, assuming Hitler's norms as described correctly in the sense of the previous paragraph, then, as so measured, a free democratic society which protects minority groups is similarly a false or evil society composed of morally spineless individuals who prefer to die in bed instead of shouting and fighting passionately for the romantically Wagnerian demands of the purely bred, law of biological status 'rights of the German *Volk*.'

"But our present question probes deeper than this. Given two such different correctly described normative nations, it asks whether there is a cognitive method which, when applied to both of them, enables one to say *in a sense which anyone anywhere can confirm* that the philosophy which correctly describes one of these nation's goal value beliefs and behavior is true and that the quite incompatible, different philosophy of that of the other nation is false?" (pages 98, 99)

From here on the argument in the book is applied, chapter by chapter, to Uruguay, the whole of the 19th century background of contemporary politics, to Asia and neutralism, and to the United States' foreign policy, to modern ways in societies still mediaeval, and to Ceylon, to the new exact sciences and their consequences, to Russia, and to China. Northrop concludes with three chapters addressed mainly to the future.

Readers of this volume who are unacquainted with *The Meeting of East and West, Science and First Principles, The Logic of the Sciences and the Humanities,* and the other fine books which have been written or edited by Northrop may misapprehend the terminology, and if so they may find the careful repetition of key phrases tiresome. The cure for this is to go back to the earlier works and become as familiar with the *meaning* of "the undifferentiated aesthetic continuum" as they may be with any other important new phrase. It may also be helpful to suggest that we are not to read Westernism, or physicalism, mechanism or any other ism into what is intended to be a universal and timeless doctrine. If we read him aright, Northrop is not aiming, on his very last page (345) to exalt "the three Semitic religions of the Middle East and the West" over all else; nor quoting Gitanjali as if Tagore were talking about Home Rule. Throughout we are to bear in mind that he is writing as a practical man, as Yale's Sterling Professor of Philosophy *and Law*. He (and Tagore) are talking about man as *logos*, as Paramatman, the truth today everywhere so dangerously neglected:

"Where the mind is without fear and the head is held high;

Where knowledge is free;

Where the world has not been broken up into fragments by narrow domestic walls;

Where words come out from the depth of truth;

Where tireless striving stretches its arms towards perfection;

Where the clear stream of reason has not lost its way into the dreary desert sand of dead habit;

Where the mind is led forward by thee into ever-widening thought and action—

Into that heaven of freedom, my Father, let my country awake."

—*F. L. Kunz*

The Shape of Men to Come

AMONG the fruits of the spectacular achievements of science has been the tendency for some scientists and popular science writers to stimulate public interest by predictions of things to come. And, as would be expected, the most popular subject for such indulgences is man himself. The fact that living organisms and human beings in particular are still scientifically among the most profound mysteries of the universe has not served to deter these efforts to peer into the future. Even some eminent biologists have not been able to resist the temptation to express their views not only on what man is becoming, but how much better off humanity would be if scientific knowledge could be put into practice.

Along with all this, there is much deploring of the dismal fate in store for mankind if some of the present trends in our Western civilization are allowed to continue. For example, it has been claimed that advances in medicine allow unfit individuals to survive with the result that the "gene pool" of the race is deteriorating in quality, that man must curtail the birth rate or invite the disaster of overpopulation, that less intelligent people tend to leave more offspring, thereby decreasing the level of intelligence.

A distinguished British zoologist, in a series of six lectures prepared for radio broadcast, has presented his views on these and other problems of man's biological and social destiny, and the talks have been published in a book, *The Future of Man,* by P. B. Medawar (Basic Books, N. Y., 1960, 128 pp., $3.00). The author begins by stating that after studying the problems he was to consider he decided "that these lectures were to be about the *process of foretelling* rather than about what is actually foretold." In the succeeding chapters, he discusses the possibilities of man's evolution and how his welfare may be affected, but is careful to point out the uncertainties and gaps in our knowledge which make scientific predictions in this area most untrustworthy.

Dr. Medawar emphasizes a nongenetic element in human evolution, the importance of which is self-evident. He points out that man, unlike all other creatures, is able not only to learn but to preserve this learning for future generations. This is leading progressively to knowledge which enables him to control his environment. Hence, natural selection, as far as mankind is concerned, arises increasingly from an environment made by man himself. The inheritance of acquired characteristics is without scientific support, but the growth of human knowledge, which is an acquired characteristic, can be passed on from generation to generation. It is this type of evolution guided by knowledge which is the main influence in social change. ". . . we can jettison all reasoning based upon the idea that changes in society happen in the style and under pressures of ordinary genetic evolution. . . ."

The author has not hesitated to speak his mind on matters which are more philosophical than scientific. He very strongly considers that nature is most inept in certain aspects of animal evolution. He states, "It is a profound truth . . . that nature does *not* know best," that, "we can, then, improve upon nature; but the possibility of our doing so depends, very obviously, upon our continuing to explore into nature and to enlarge our knowledge and understanding of what is going on." At the same time, he considers that "the evolution of a brain was a feat of fantastic difficulty—the most spectacular enterprise since the origin of life itself." Apparently in this particular undertaking nature was not so inept after all.

Most thinking people will agree with the main thesis put forth in this book, which is that man, for better or for worse, is influencing his own evolution through his accumulating knowledge and that, "The inference we can draw from an analytical study of the differences between ourselves and other animals is surely this: that the bells which toll for mankind are—most of them anyway—like the bells on Alpine cattle; they are attached to our own necks, and it must be *our* fault if they do not make a cheerful and harmonious sound." —*Alfred Taylor*

In Brief —

Avicenna and the Visionary Recital, by Henry Corbin, translated by Willard R. Trask, Bollingen Series LXVI, Pantheon, 1960, 423 pp., index, $7.50.
In this volume, handsome as all the Bollingen publications, is contained a study of the eleventh century Persian phliosopher, physician and mystic Avicenna (Ibn Sina). The aim of the author, a distinguished scholar of Islamic religion, is to direct the attention of contemporary philosophers and psychologists to the Avicennan "recitals," which exemplify the archetype that continues to possess the Iranian people and inspire their poetry and literature. To this end, he has, in Part I, summarized the great themes that show the philosophical situation of Avicennan man in the cosmos, and presented translations of three Avicennan recitals. In Part II, there is a complete translation of a newly discovered Persian commentary, with notes that attempt to co-ordinate these medieval documents with contemporary research. A work of fine scholarship, beautifully mounted.

History and Philosophy of Science, by L. W. H. Hull, Longmans, Green, 1959, 350 pp., index, $5.00.
A readable book, whose avowed purpose is to bridge the gap between science and the humanities by considering scientific ideas in a context of history and philosophy. Towards this end, the connections of science with other modes of thought are stressed in tracing the historical growth of scientific ideas. These, in turn, are discussed from the point of view of their influence and dependence upon the whole of modern thought.

Talks on the Gita, by Vinoba Bhave, Macmillan, 1960, 268 pp., $3.25.
A simple, direct discussion of the most central book of Hindu faith. This spiritual work is approached from the point of view of direct experience and realization, but it is also illuminated for the Westerner by a thorough Sanskrit scholarship. The author is the well-known follower of Gandhi who has developed the concept of a nonviolent social order into the *Bhoodan* movement of social reconstruction.